REMARKS

Please reconsider the application in view of the above amendments and the following remarks. Applicant thanks the Examiner for carefully considering this application.

Disposition of Claims

Claims 1-21 are pending in this application. Claims 1 and 10 are independent. The remaining claims depend, directly or indirectly, from claims 1 and 10. Claims 1, 9, and 10 have been amended in this reply to clarify the present invention recited. Claims 18-21 have been added to more fully claim the present invention recited. No new matter has been added by these amendments. Support for these amendments may be found in Figure 2 and the accompanying description.

Rejection(s) under 35 U.S.C § 112

Claim 9 stands rejected under 35 U.S.C. § 112, second paragraph, as indefinite. In view of the Examiner's comments, claim 9 has been amended in this reply to clarify the present invention recited. No new matter has been added by this amendment as support for the amendment may found in Figure 2 and on page 7, in lines 12-20 of the present application. Accordingly, withdrawal of this rejection is respectfully requested.

Rejection(s) under 35 U.S.C § 103

Claims 1, 2, and 9-11 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over either European Patent Application No. EP 0 948 988 A1 ("Kazuyoshi") or U.S. Patent No. 4,254,062 ("Wambach") in view of either U.S. Patent No. 3,121,321 ("Karasek") or U.S. Patent No. 3,550,429 ("MacMurtrie"). Claims 1, 9, and 10 have been amended in the present application to clarify the present invention recited. No new matter has been added by these amendments. Support for these amendments may be found in Figure 2 of the present application and in the accompanying description. To the extent that this rejection may still apply to the amended claims, the rejection is respectfully traversed.

As amended, independent claim 1 recites a gas separation apparatus for separating at least *two* specific gas from a gas to be treated which contains a plurality of specific gases, wherein the gas separation apparatus includes a first separator and a second separator. The first separator separates said gas to be treated into gas groups having different boiling points by distillation separation, and the second separator separates the at least two specific gases by performing chromatographic separation on at least one gas group separated by said first separator.

In addition, the second separator includes a plurality of chromatographic columns each having at least one inlet valve and a plurality of outlet valves. The at least one inlet valve and the plurality of outlet valves are arranged such that the at least one gas group is sequentially supplied to the plurality of chromatographic columns by switching at least one inlet valve, and the at least two specific gases are sequentially collected from the plurality of chromatographic columns by switching the plurality of outlet valves.

Further, for at least one of the plurality of chromatographic columns, the plurality of outlet valves comprises a first outlet valve, a second outlet valve, and a third outlet valve. The first outlet valve discharges a first gas of the at least two specific gases, the second outlet valve discharges a second gas of the at least two specific gases, and the third outlet valve discharges a mixture gas of the at least two specific gases.

Likewise, as amended, independent claim 10, recites a gas separation method for separating at least *two* specific gases, where, of a plurality of chromatographic columns, a first chromatographic column includes a plurality of outlet valves having a first outlet valve, a second outlet valve, and a third outlet valve, where a first gas of the at least two specific gases is collected from the first outlet valve, a second gas of the at least two specific gases is collected from the second outlet valve, and a mixture gas of the at least two specific gases is collected from the third outlet valve.

As shown in Figure 2 of the present application, a gas separation apparatus separates at least two specific gases, e.g., CF_4 and NF_3, from a gas to be treated. The gas separation apparatus includes a plurality of chromatographic columns (1a, 1b, 1c, and 1d), wherein any one of the chromatographic columns has three outlet valves. The first outlet valves is used to discharge a first gas, *e.g.*, CF_4, the second outlet valve is used to discharge a second gas, *e.g.*, NF_3, and the third outlet valve is used to discharge a mixture

of the first and second gases, *e.g.*, CF_4+NF_3. Advantageously, because the chromatographic column includes three outlet valves, the chromatographic column may be used to selectively discharge any one of the first gas, the second gas, and the mixture of the first and second gases.

The Examiner asserts that both Karasek and MacMurtrie show a plurality of outlet valves for discharge from each chromatographic column individually. However, as is shown in Figure 1 of Karasek, each column of a plurality of chromatographic columns (10, 11) includes only a single outlet valve, and, thus, and in contrast to the present invention, none of the chromatographic columns disclosed by Karasek may be used to selectively discharge any one of a first specific gas, a second specific gas, and a mixture of the first and second specific gases.

Further, as is shown in Figure 1 of MacMurtrie and in contrast to the present invention, each column of a plurality of chromatographic columns (46, 42, 43) includes only a single outlet valve (30, 31, 32, respectively). Thus, as mentioned above with respect to Karasek, none of the chromatographic columns disclosed by MacMurtrie may be used to selectively discharge any one of a first specific gas, a second specific gas, and a mixture of the first and second specific gases. Accordingly, both Karasek and MacMurtrie fail to teach the invention recited in amended claims 1 and 10.

In view of the above, Kazuyoshi, Wambach, Karasek, and MacMurtrie fail to show or suggest the present invention as recited in independent claims 1 and 10, whether considered separately or in combination. Thus, the claims as amended are patentable over Kazuyoshi, Wambach, Karasek, and MacMurtrie. Dependent claims are allowable for at least the same reasons. Accordingly, withdrawal of this rejection is respectfully requested.

Claims 3-8 and 12-17 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over either Kazuyoshi or Wambach in view of either Karasek or MacMurtrie, and further in view of either European Patent Application No. EP 0 924 485 A1 ("Takashi"), EP 0 854 335 A2 ("Bao"), or EP 0 500 040 A1 ("Henderson"). Claims 1 and 10 have been amended in the present application to clarify the present invention recited. No new matter has been added by these amendments. Support for these amendments may be found in Figure 2 of the present application and in the

accompanying description. To the extent that this rejection may still apply to the amended claims, the rejection is respectfully traversed.

As mentioned above with respect to independent claims 1 and 10, Kazuyoshi, Wambach, Karasek, and MacMurtrie fail to show or suggest the present invention as recited, whether considered separately or in combination. Further, Takashi, Bao, and Henderson fail to provide that which Kazuyoshi, Wambach, Karasek, and MacMurtrie lack with respect to the present invention. Thus, claims 1 and 10 as amended are patentable over Kazuyoshi, Wambach, Karasek, MacMurtrie, Takashi, Bao, and Henderson, whether considered separately in combination. Claims 3-8 and 12-17, which respectively depend from claims 1 and 10, are allowable for at least the same reasons. Accordingly, withdrawal of this rejection is respectfully requested.

Conclusion

Applicant believes this reply to be fully responsive to all outstanding issues and place this application in condition for allowance. If this belief is incorrect, or other issues arise, do not hesitate to contact the undersigned or his associates at the telephone number listed below. Please apply any charges not covered, or any credits, to Deposit Account 50-0591 (Reference Number 08228.018001).

Respectfully submitted,

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